

## Potassium Cyanide Sodium Cyanide

Work with cyanide-containing compounds requires special care. The Iowa State University Chemical Hygiene Plan has prescriptive requirements for work with chemicals.

### KNOW THE HAZARDS OF THE MATERIALS YOU ARE USING.

All research activities at Ames Laboratory require approval by the Safety Review Committee. The procedure used for this approval is **READINESS REVIEW**. Make sure the activity you are working on has been approved via the Readiness Review procedure and that you are authorized to be performing work. Ask your supervisor.

Here are some general recommendations for work with potassium and sodium cyanide:

### PERSONAL PROTECTION

**Eye Protection:** Splash-proof safety goggles.

**Gloves:** Impervious gloves, latex or polyvinyl chloride (PVC)

**Ventilation:** Use in a hood with at least 100 fpm face velocity.

**Respirator:** Use a NIOSH-approved supplied air respirator. Contact ESH&A for appropriate equipment.

**Clothing:** Lab coat and impervious apron where appropriate.

**NIOSH:** Recommended Exposure Limit (REL), 10 minute ceiling.

Potassium Cyanide 5 mg/m<sup>3</sup>

Sodium Cyanide: 5 mg/m<sup>3</sup>

### FIRST AID

If exposure is due to the release of hydrogen cyanide (HCN), immediately leave the area and call 911 for assistance.

If skin contact has been made by cyanide-bearing compounds, immediately flush skin with water for 15 minutes.

Notify your supervisor, ESH&A and/or Occupational Medicine if an exposure has occurred.

### HANDLING PRECAUTIONS

Avoid heating any cyanide salt to decomposition, as it will release HYDROGEN CYANIDE gas.

Hydrogen cyanide is toxic, and a flammable gas.

Avoid mixing cyanide salts with the following compounds:

- Acids, release of HCN
- Chlorates, potential explosive
- Nitrates and Nitrites, which are potentially explosive
- Oxidizers have the potential for explosion

### HEALTH EFFECTS

Acute toxicity is high; ingestion of NaCN or KCN or exposure to their salts or their aqueous solutions by eye or skin contact can be fatal; exposure to as little as 50-150 milligrams can cause immediate collapse and death.

Symptoms of nonlethal exposure to cyanide include weakness, headache, dizziness, rapid breathing, nausea, and vomiting.

Cyanide salts are corrosive and toxic.

Decomposition products of HCN and nitrogen oxides are extremely hazardous.

LD<sub>50</sub> (Lethal Dose for 50% of test subjects) is:

KCN, 8.5mg/kg, oral – rat

NaCN, 6.4 mg/kg, oral – rat

### STORAGE/DISPOSAL

Store separately from incompatible chemicals, especially acids and oxidizers.

Store in a cool dry location.

If more than one pound (1 lb.) of a cyanide salt is stored in the same physical location, notify ESH&A for emergency planning requirements.

### SPILL REMEDIATION

**Spills of cyanide salts should be treated very cautiously.**

Get assistance with large spills by calling 911 or the ESH&A office (294-2153).

Absorb small liquid spills onto an inert material. **DO NOT ALLOW SPILLED MATERIAL TO COME INTO CONTACT WITH YOUR SKIN.**

Dry spills can be shoveled into a secure container for later disposal. **DO NOT ALLOW SPILLED MATERIAL TO COME INTO CONTACT WITH YOUR SKIN.**

After a spill has occurred, ventilate any closed areas before re-entry.

## PHYSICAL PROPERTIES

### POTASSIUM CYANIDE

**Formula:** KCN  
**CAS#** 151-50-8  
**Appearance:** Colorless to white granules with a faint odor of bitter almonds.  
**Solubility:** Soluble in glycerol, slightly soluble in methanol.  
**PH or 0.1N Solution:** 11  
**RCRA:** PO98  
**Shipping Description:** Sodium Cyanide, Poison, 6.1 UN1684

### SODIUM CYANIDE

**Formula:** NaCN  
**CAS#:** 143-33-9  
**Molecular Weight:** 49.01  
**Appearance:** Colorless to white granules with a faint odor of bitter almonds.  
**Solubility:** Soluble in glycerol, slightly soluble in methanol.

**Specific Gravity:** 1.61, water = 1  
**RCRA:** P106  
**Shipping Description:** Sodium Cyanide, Poison, 6.1, UN1689

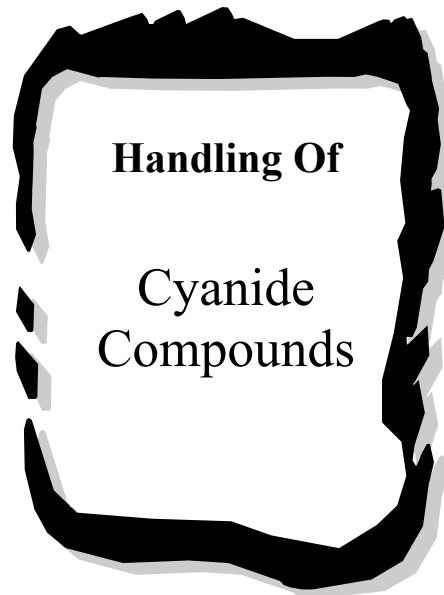
## REFERENCES

**Merck Index**, 11<sup>th</sup> ed., Abstracts 4711, 7607, 8458, 8553

**Health Care and First Aid in Hazards In The Chemical Laboratory**, 4<sup>th</sup> ed., Bretherick, I., Ed., Royal Society of Chemistry, London, England, 1986, p. 132-4.

**Handling And Use Of Chemicals in CRC Handbook of Laboratory Safety**, 3<sup>rd</sup> ed., Furr, A.K., Ed., CRC Press, Boca Raton, FL, 1990, p. 299-302.

**Prudent Practices for Handling Hazardous Chemicals in Laboratories**, National Academy Press, Washington, D.C., 1995, p. 394-395.



POTASSIUM CYANIDE



SODIUM CYANIDE



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Not intended to replace the Material Safety Data Sheet